



EXOPLANETS

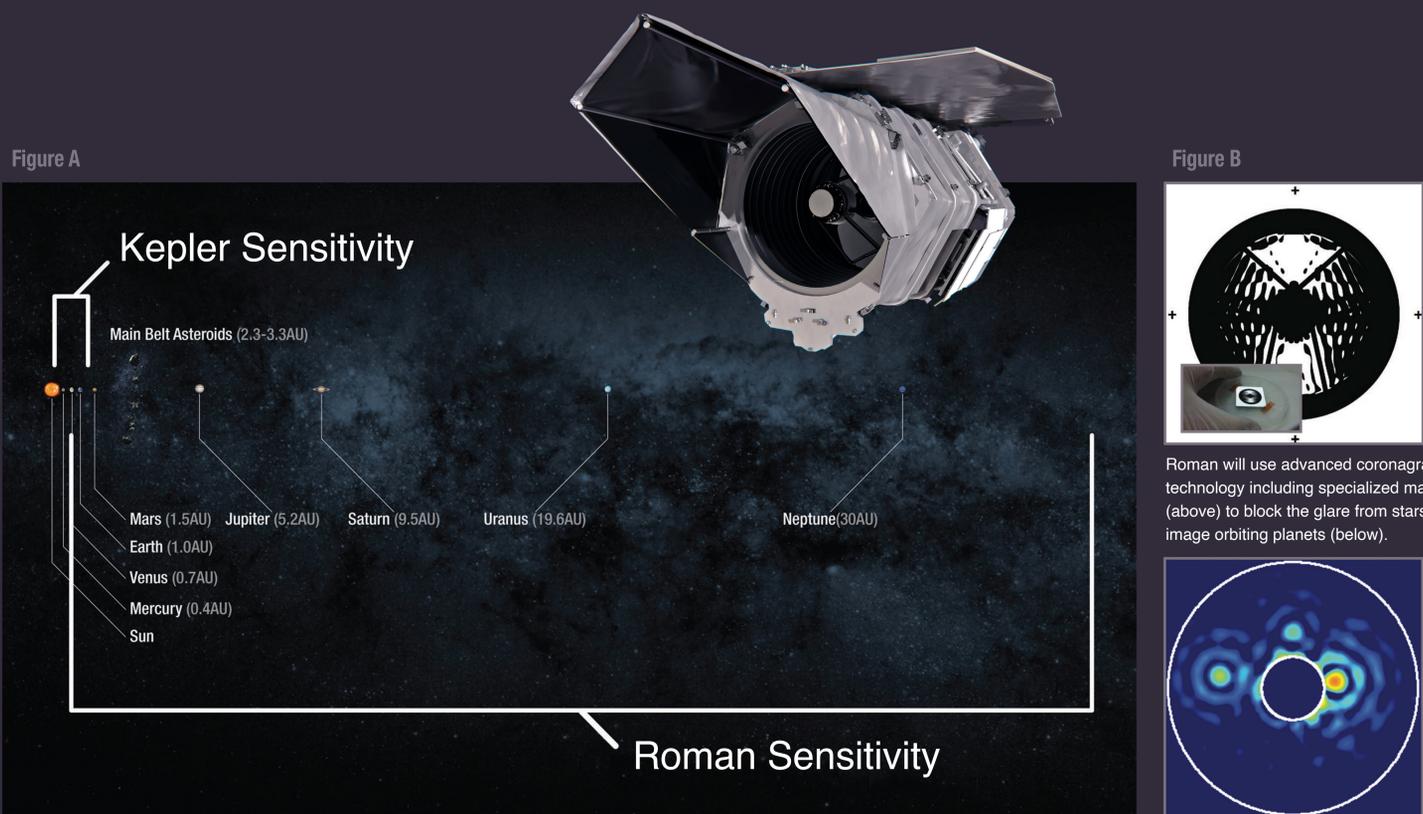
Exploring Exoplanetary Systems



NASA's Nancy Grace Roman Space Telescope will open a new window onto the cosmos, unveiling celestial wonders near and far. One of the mission's purposes involves advancing research about exoplanets – worlds outside our solar system.

Roman will find a host of new planets, including rocky worlds in the habitable zone, by watching to see when pairs of unrelated stars nearly align in the sky. The nearer star and any orbiting planets can focus, or “lens,” light from the background star, signaling their presence. While most currently known planets have tiny orbits, this method (called microlensing) will reveal planets at distances similar to what is found in our solar system (Figure A).

The mission will also directly image nearby exoplanets using a Coronagraph Instrument (Figure B) designed to demonstrate several cutting-edge technologies. Blocking the host star's light brings fainter orbiting planets into view, and imaging in visible light will allow astronomers to see older, colder worlds (similar to the outer planets in our solar system) than they can currently photograph. The Roman Coronagraph will be sensitive to objects that are nearly 1 billion times dimmer than their host star, which is like seeing the light from a firefly buzzing around a lighthouse on the opposite side of the United States. The Coronagraph's results will pave the way for future NASA missions aimed at imaging and characterizing faint, Earth-like planets in search of life.



Credit: PHL @ UPR Arcibo (phl.upr.edu), ESA/Hubble, NASA